



SEQUENCE LISTING

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LASKO, DANA

<120> CLOSTRIDIUM BOTULINUM C3 EXOTRANSFERASE COMPOSITIONS AND METHODS
FOR TREATING TUMOUR SPREADING

<130> 1912-0330PUS1

<140> US 10/573,658

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<150> PCT/CA04/01763

<151> 2004-09-29

<150> US 10/902,879

<151> 2004-08-02

<150> US 60/506,162

<151> 2003-09-29

<160> 59

<170> PatentIn version 3.1

<210> 1

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used to remove the stop codon from ADP-ribosyl
transferase C3 (Clostridium botulinum) cDNA.

<400> 1

gaattcttta ggattgatag ctgtgcc

27

<210> 2

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used to remove the stop codon from ADP-ribosyl
transferase C3 (Clostridium botulinum) cDNA.

<400> 2

ggtggcgacc atcctccaaa a

21

<210> 3

<211> 888

<212> DNA

<213> Artificial Sequence

<220>
 <223> Sequence of C3APL: includes ADP-ribosyl transferase C3
 (Clostridium botulinum) and Antennapedia sequence.

<220>
 <221> CDS
 <222> (1)..(888)

<400> 3

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat	48
Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn	
1 5 10 15	
caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa	96
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln	
20 25 30	
gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa	144
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys	
35 40 45	
tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata	192
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile	
50 55 60	
aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca	240
Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser	
65 70 75 80	
aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg	288
Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met	
85 90 95	
aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat	336
Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr	
100 105 110	
tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att	384
Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile	
115 120 125	
aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat	432
Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp	
130 135 140	
aga ctt gaa tat gga tat att agt act tca tta atg aat gtc tct caa	480
Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln	
145 150 155 160	
ttt gca gga aga cca att att aca caa ttt aaa gta gca aaa ggc tca	528
Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser	
165 170 175	
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa	576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu	
180 185 190	

atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg	624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu	
195 200 205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca	672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr	
210 215 220	
gct atc aat cct aaa gaa ttc gtg atg gaa tcc cgc aaa cgc gca agg	720
Ala Ile Asn Pro Lys Glu Phe Val Met Glu Ser Arg Lys Arg Ala Arg	
225 230 235 240	
cag aca tac acc cgg tac cag act cta gag cta gag aag gag ttt cac	768
Gln Thr Tyr Thr Arg Tyr Gln Thr Leu Glu Leu Glu Lys Glu Phe His	
245 250 255	
ttc aat cgc tac ttg acc cgt cgg cga agg atc gag atc gcc cac gcc	816
Phe Asn Arg Tyr Leu Thr Arg Arg Arg Arg Ile Glu Ile Ala His Ala	
260 265 270	
ctg tgc ctc acg gag cgc cag ata aag att tgg ttc cag aat cgg cgc	864
Leu Cys Leu Thr Glu Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg	
275 280 285	
atg aag tgg aag aag gag aac tga	888
Met Lys Trp Lys Lys Glu Asn	
290 295	

<210> 4
 <211> 295
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3APLT: includes ADP-ribosyl transferase C3
 (Clostridium botulinum) and Antennapedia sequence.

<400> 4

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn	
1 5 10 15	
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln	
20 25 30	
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys	
35 40 45	
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile	
50 55 60	

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser
165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
210 215 220

Ala Ile Asn Pro Lys Glu Phe Val Met Glu Ser Arg Lys Arg Ala Arg
225 230 235 240

Gln Thr Tyr Thr Arg Tyr Gln Thr Leu Glu Leu Glu Lys Glu Phe His
245 250 255

Phe Asn Arg Tyr Leu Thr Arg Arg Arg Arg Ile Glu Ile Ala His Ala
260 265 270

Leu Cys Leu Thr Glu Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg
275 280 285

Met Lys Trp Lys Lys Glu Asn

290

295

<210> 5

<211> 774

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3APS: Includes ADP-ribosyl transferase C3
(Clostridium botulinum) and Antennapedia sequence.

<220>

<221> CDS

<222> (1)..(774)

<400> 5

gga	tcc	tct	aga	gtc	gac	ctg	cag	gca	tgc	aat	gct	tat	tcc	att	aat	48
Gly	Ser	Ser	Arg	Val	Asp	Leu	Gln	Ala	Cys	Asn	Ala	Tyr	Ser	Ile	Asn	
1				5					10					15		

caa	aag	gct	tat	tca	aat	act	tac	cag	gag	ttt	act	aat	att	gat	caa	96
Gln	Lys	Ala	Tyr	Ser	Asn	Thr	Tyr	Gln	Glu	Phe	Thr	Asn	Ile	Asp	Gln	
			20					25					30			

gca	aaa	gct	tgg	ggt	aat	gct	cag	tat	aaa	aag	tat	gga	cta	agc	aaa	144
Ala	Lys	Ala	Trp	Gly	Asn	Ala	Gln	Tyr	Lys	Lys	Tyr	Gly	Leu	Ser	Lys	
		35					40					45				

tca	gaa	aaa	gaa	gct	ata	gta	tca	tat	act	aaa	agc	gct	agt	gaa	ata	192
Ser	Glu	Lys	Glu	Ala	Ile	Val	Ser	Tyr	Thr	Lys	Ser	Ala	Ser	Glu	Ile	
	50					55					60					

aat	gga	aag	cta	aga	caa	aat	aag	gga	gtt	atc	aat	gga	ttt	cct	tca	240
Asn	Gly	Lys	Leu	Arg	Gln	Asn	Lys	Gly	Val	Ile	Asn	Gly	Phe	Pro	Ser	
65					70					75					80	

aat	tta	ata	aaa	caa	gtt	gaa	ctt	tta	gat	aaa	tct	ttt	aat	aaa	atg	288
Asn	Leu	Ile	Lys	Gln	Val	Glu	Leu	Leu	Asp	Lys	Ser	Phe	Asn	Lys	Met	
				85					90					95		

aag	acc	cct	gaa	aat	att	atg	tta	ttt	aga	ggc	gac	gac	cct	gct	tat	336
Lys	Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr	
			100					105					110			

tta	gga	aca	gaa	ttt	caa	aac	act	ctt	ctt	aat	tca	aat	ggt	aca	att	384
Leu	Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile	
		115					120						125			

aat	aaa	acg	gct	ttt	gaa	aag	gct	aaa	gct	aag	ttt	tta	aat	aaa	gat	432
Asn	Lys	Thr	Ala	Phe	Glu	Lys	Ala	Lys	Ala	Lys	Phe	Leu	Asn	Lys	Asp	
	130					135					140					

aga	ctt	gaa	tat	gga	tat	att	agt	act	tca	tta	atg	aat	gtc	tct	caa	480
Arg	Leu	Glu	Tyr	Gly	Tyr	Ile	Ser	Thr	Ser	Leu	Met	Asn	Val	Ser	Gln	
145					150					155					160	

ttt gca gga aga cca att att aca caa ttt aaa gta gca aaa ggc tca	528
Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser	
165 170 175	
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa	576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu	
180 185 190	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg	624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu	
195 200 205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca	672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr	
210 215 220	
gct atc aat cct aaa gaa ttc cgc cag atc aag att tgg ttc cag aat	720
Ala Ile Asn Pro Lys Glu Phe Arg Gln Ile Lys Ile Trp Phe Gln Asn	
225 230 235 240	
cgt cgc atg aag tgg aag aag gtc gac tcg agc ggc cgc atc gtg act	768
Arg Arg Met Lys Trp Lys Lys Val Asp Ser Ser Gly Arg Ile Val Thr	
245 250 255	
gac tga	774
Asp	

<210> 6
 <211> 257
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3APS: Includes ADP-ribosyl transferase C3
 (Clostridium botulinum) and Antennapedia sequence.

<400> 6

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn	
1 5 10 15	
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln	
20 25 30	
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys	
35 40 45	
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile	
50 55 60	

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser
165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
210 215 220

Ala Ile Asn Pro Lys Glu Phe Arg Gln Ile Lys Ile Trp Phe Gln Asn
225 230 235 240

Arg Arg Met Lys Trp Lys Lys Val Asp Ser Ser Gly Arg Ile Val Thr
245 250 255

Asp

<210> 7
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the amplification of Antennapedia
 sequence

<400> 7
 gaatcccgcga aacgcgcaag gcag 24

<210> 8
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the amplification of Antennapedia
 sequence

<400> 8
 tcagttctcc ttcttccact tcatgcg 27

<210> 9
 <211> 54
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of sequences from
 Antennapedia

<400> 9
 aattccgccca gatcaagatt tggttccaga atcgctcgcat gaagtgggaag aagg 54

<210> 10
 <211> 54
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of sequences from
 Antennapedia

<400> 10
 ggcgggtctag ttctaaacca agctcttagc agcgtagttc accttcttcc agct 54

<210> 11
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the amplification of a sequence
 corresponding to amino acid 27-72 of HIV-1 Tat

<400> 11
gaatccaagc atccaggaag tcagcc 26

<210> 12
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide used in the amplification of a sequence
corresponding to amino acid 27-72 of HIV-1 Tat

<400> 12
accagccacc accttctgat a 21

<210> 13
<211> 876
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence of C3-TL: Includes ADP-ribosyl transferase C3
(Clostridium botulinum) and HIV-1 Tat sequence.

<220>
<221> CDS
<222> (1)..(876)

<400> 13
gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48
Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
1 5 10 15
caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
20 25 30
gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
35 40 45
tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
50 55 60
aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240
Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
65 70 75 80
aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288
Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
85 90 95
aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336

Lys	Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr	
			100					105					110			
tta	gga	aca	gaa	ttt	caa	aac	act	ctt	ctt	aat	tca	aat	ggt	aca	att	384
Leu	Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile	
		115					120					125				
aat	aaa	acg	gct	ttt	gaa	aag	gct	aaa	gct	aag	ttt	tta	aat	aaa	gat	432
Asn	Lys	Thr	Ala	Phe	Glu	Lys	Ala	Lys	Ala	Lys	Phe	Leu	Asn	Lys	Asp	
	130					135					140					
aga	ctt	gaa	tat	gga	tat	att	agt	act	tca	tta	atg	aat	gtc	tct	caa	480
Arg	Leu	Glu	Tyr	Gly	Tyr	Ile	Ser	Thr	Ser	Leu	Met	Asn	Val	Ser	Gln	
145					150					155					160	
ttt	gca	gga	aga	cca	att	att	aca	caa	ttt	aaa	gta	gca	aaa	ggc	tca	528
Phe	Ala	Gly	Arg	Pro	Ile	Ile	Thr	Gln	Phe	Lys	Val	Ala	Lys	Gly	Ser	
				165				170						175		
aag	gca	gga	tat	att	gac	cct	att	agt	gct	ttt	cag	gga	caa	ctt	gaa	576
Lys	Ala	Gly	Tyr	Ile	Asp	Pro	Ile	Ser	Ala	Phe	Gln	Gly	Gln	Leu	Glu	
			180					185					190			
atg	ttg	ctt	cct	aga	cat	agt	act	tat	cat	ata	gac	gat	atg	aga	ttg	624
Met	Leu	Leu	Pro	Arg	His	Ser	Thr	Tyr	His	Ile	Asp	Asp	Met	Arg	Leu	
		195					200					205				
tct	tct	gat	ggt	aaa	caa	ata	ata	att	aca	gca	aca	atg	atg	ggc	aca	672
Ser	Ser	Asp	Gly	Lys	Gln	Ile	Ile	Ile	Thr	Ala	Thr	Met	Met	Gly	Thr	
	210					215					220					
gct	atc	aat	cct	aaa	gaa	ttc	aag	cat	cca	gga	agt	cag	cct	aaa	act	720
Ala	Ile	Asn	Pro	Lys	Glu	Phe	Lys	His	Pro	Gly	Ser	Gln	Pro	Lys	Thr	
225					230					235					240	
gct	tgt	acc	aat	tgc	tat	tgt	aaa	aag	tgt	tgc	ttt	cat	tgc	caa	gtt	768
Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe	His	Cys	Gln	Val	
				245					250					255		
tgt	ttc	ata	aca	aaa	gcc	tta	ggc	atc	tcc	tat	ggc	agg	aag	cgg	aga	816
Cys	Phe	Ile	Thr	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Lys	Arg	Arg	
			260				265						270			
cag	cga	cga	aga	gct	cat	cag	aac	agt	cag	act	cat	caa	gct	tct	cta	864
Gln	Arg	Arg	Arg	Ala	His	Gln	Asn	Ser	Gln	Thr	His	Gln	Ala	Ser	Leu	
		275					280					285				
tca	aag	cag	taa													876
Ser	Lys	Gln														
		290														
<210>	14															
<211>	291															
<212>	PRT															
<213>	Artificial Sequence															

<220>

<223> Sequence of C3-TL: Includes ADP-ribosyl transferase C3
(Clostridium botulinum) and HIV-1 Tat sequence.

<400> 14

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
1 5 10 15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
50 55 60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser
165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
 210 215 220

Ala Ile Asn Pro Lys Glu Phe Lys His Pro Gly Ser Gln Pro Lys Thr
 225 230 235 240

Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His Cys Gln Val
 245 250 255

Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys Arg Arg
 260 265 270

Gln Arg Arg Arg Ala His Gln Asn Ser Gln Thr His Gln Ala Ser Leu
 275 280 285

Ser Lys Gln
 290

<210> 15
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of sequences from HIV-1
 Tat

<400> 15
 aattctatgg tcgtaaaaaa cgtcgtcaac gtcgtcgtg 39

<210> 16
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of sequences from HIV-1 Tat

<400> 16
 gataccagca ttttttgcag cagttgcagc agcacagct 39

<210> 17
 <211> 756
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of C3-TS: Includes ADP-ribosyl transferase C3

(Clostridium botulinum) and HIV-1 Tat sequence.

<220>

<221> CDS

<222> (1)..(756)

<400> 17

gga	tcc	tct	aga	gtc	gac	ctg	cag	gca	tgc	aat	gct	tat	tcc	att	aat	48
Gly	Ser	Ser	Arg	Val	Asp	Leu	Gln	Ala	Cys	Asn	Ala	Tyr	Ser	Ile	Asn	
1				5					10					15		

caa	aag	gct	tat	tca	aat	act	tac	cag	gag	ttt	act	aat	att	gat	caa	96
Gln	Lys	Ala	Tyr	Ser	Asn	Thr	Tyr	Gln	Glu	Phe	Thr	Asn	Ile	Asp	Gln	
			20					25					30			

gca	aaa	gct	tgg	ggt	aat	gct	cag	tat	aaa	aag	tat	gga	cta	agc	aaa	144
Ala	Lys	Ala	Trp	Gly	Asn	Ala	Gln	Tyr	Lys	Lys	Tyr	Gly	Leu	Ser	Lys	
		35					40					45				

tca	gaa	aaa	gaa	gct	ata	gta	tca	tat	act	aaa	agc	gct	agt	gaa	ata	192
Ser	Glu	Lys	Glu	Ala	Ile	Val	Ser	Tyr	Thr	Lys	Ser	Ala	Ser	Glu	Ile	
	50					55					60					

aat	gga	aag	cta	aga	caa	aat	aag	gga	ggt	atc	aat	gga	ttt	cct	tca	240
Asn	Gly	Lys	Leu	Arg	Gln	Asn	Lys	Gly	Val	Ile	Asn	Gly	Phe	Pro	Ser	
65					70					75					80	

aat	tta	ata	aaa	caa	ggt	gaa	ctt	tta	gat	aaa	tct	ttt	aat	aaa	atg	288
Asn	Leu	Ile	Lys	Gln	Val	Glu	Leu	Leu	Asp	Lys	Ser	Phe	Asn	Lys	Met	
				85					90					95		

aag	acc	cct	gaa	aat	att	atg	tta	ttt	aga	ggc	gac	gac	cct	gct	tat	336
Lys	Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr	
			100					105					110			

tta	gga	aca	gaa	ttt	caa	aac	act	ctt	ctt	aat	tca	aat	ggt	aca	att	384
Leu	Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile	
		115					120					125				

aat	aaa	acg	gct	ttt	gaa	aag	gct	aaa	gct	aag	ttt	tta	aat	aaa	gat	432
Asn	Lys	Thr	Ala	Phe	Glu	Lys	Ala	Lys	Ala	Lys	Phe	Leu	Asn	Lys	Asp	
	130					135					140					

aga	ctt	gaa	tat	gga	tat	att	agt	act	tca	tta	atg	aat	gtc	tct	caa	480
Arg	Leu	Glu	Tyr	Gly	Tyr	Ile	Ser	Thr	Ser	Leu	Met	Asn	Val	Ser	Gln	
145					150					155					160	

ttt	gca	gga	aga	cca	att	att	aca	caa	ttt	aaa	gta	gca	aaa	ggc	tca	528
Phe	Ala	Gly	Arg	Pro	Ile	Ile	Thr	Gln	Phe	Lys	Val	Ala	Lys	Gly	Ser	
				165				170						175		

aag	gca	gga	tat	att	gac	cct	att	agt	gct	ttt	cag	gga	caa	ctt	gaa	576
Lys	Ala	Gly	Tyr	Ile	Asp	Pro	Ile	Ser	Ala	Phe	Gln	Gly	Gln	Leu	Glu	
			180					185					190			

atg	ttg	ctt	cct	aga	cat	agt	act	tat	cat	ata	gac	gat	atg	aga	ttg	624
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Met	Leu	Leu	Pro	Arg	His	Ser	Thr	Tyr	His	Ile	Asp	Asp	Met	Arg	Leu		
	195						200					205					
tct	tct	gat	ggt	aaa	caa	ata	ata	att	aca	gca	aca	atg	atg	ggc	aca		672
Ser	Ser	Asp	Gly	Lys	Gln	Ile	Ile	Ile	Thr	Ala	Thr	Met	Met	Gly	Thr		
	210					215					220						
gct	atc	aat	cct	aaa	gaa	ttc	tat	ggt	gct	aaa	aaa	cgt	cgt	caa	cgt		720
Ala	Ile	Asn	Pro	Lys	Glu	Phe	Tyr	Gly	Ala	Lys	Lys	Arg	Arg	Gln	Arg		
225					230					235					240		
cgt	cgt	gtc	gac	tcg	agc	ggc	ccg	cat	cgt	gac	tga						756
Arg	Arg	Val	Asp	Ser	Ser	Gly	Pro	His	Arg	Asp							
				245					250								

<210> 18
 <211> 251
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3-TS: Includes ADP-ribosyl transferase C3
 (Clostridium botulinum) and HIV-1 Tat sequence.

<400> 18

Gly	Ser	Ser	Arg	Val	Asp	Leu	Gln	Ala	Cys	Asn	Ala	Tyr	Ser	Ile	Asn		
1				5					10					15			
Gln	Lys	Ala	Tyr	Ser	Asn	Thr	Tyr	Gln	Glu	Phe	Thr	Asn	Ile	Asp	Gln		
			20					25					30				
Ala	Lys	Ala	Trp	Gly	Asn	Ala	Gln	Tyr	Lys	Lys	Tyr	Gly	Leu	Ser	Lys		
		35					40					45					
Ser	Glu	Lys	Glu	Ala	Ile	Val	Ser	Tyr	Thr	Lys	Ser	Ala	Ser	Glu	Ile		
	50					55					60						
Asn	Gly	Lys	Leu	Arg	Gln	Asn	Lys	Gly	Val	Ile	Asn	Gly	Phe	Pro	Ser		
65					70					75					80		
Asn	Leu	Ile	Lys	Gln	Val	Glu	Leu	Leu	Asp	Lys	Ser	Phe	Asn	Lys	Met		
				85					90					95			
Lys	Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr		
			100					105					110				
Leu	Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile		
		115					120					125					

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
 130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
 145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser
 165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
 180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
 195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
 210 215 220

Ala Ile Asn Pro Lys Glu Phe Tyr Gly Ala Lys Lys Arg Arg Gln Arg
 225 230 235 240

Arg Arg Val Asp Ser Ser Gly Pro His Arg Asp
 245 250

<210> 19
 <211> 1413
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Includes GST sequences, ADP-ribosyl transferase C3
 (C. botulinum) sequence and a random basic amino acid sequence.

<220>
 <221> CDS
 <222> (1)..(1413)

<400> 19
 atg tcc cct ata cta ggt tat tgg aaa att aag ggc ctt gtg caa ccc 48
 Met Ser Pro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln Pro
 1 5 10 15
 act cga ctt ctt ttg gaa tat ctt gaa gaa aaa tat gaa gag cat ttg 96
 Thr Arg Leu Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu His Leu
 20 25 30

tat gag cgc gat gaa ggt gat aaa tgg cga aac aaa aag ttt gaa ttg Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu 35 40 45	144
ggt ttg gag ttt ccc aat ctt cct tat tat att gat ggt gat gtt aaa Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp Gly Asp Val Lys 50 55 60	192
tta aca cag tct atg gcc atc ata cgt tat ata gct gac aag cac aac Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile Ala Asp Lys His Asn 65 70 75 80	240
atg ttg ggt ggt tgt cca aaa gag cgt gca gag att tca atg ctt gaa Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu 85 90 95	288
gga gcg gtt ttg gat att aga tac ggt gtt tcg aga att gca tat agt Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser 100 105 110	336
aaa gac ttt gaa act ctc aaa gtt gat ttt ctt agc aag cta cct gaa Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu 115 120 125	384
atg ctg aaa atg ttc gaa gat cgt tta tgt cat aaa aca tat tta aat Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn 130 135 140	432
ggt gat cat gta acc cat cct gac ttc atg ttg tat gac gct ctt gat Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp 145 150 155 160	480
gtt gtt tta tac atg gac cca atg tgc ctg gat gcg ttc cca aaa tta Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu 165 170 175	528
gtt tgt ttt aaa aaa cgt att gaa gct atc cca caa att gat aag tac Val Cys Phe Lys Lys Arg Ile Glu Ala Ile Pro Gln Ile Asp Lys Tyr 180 185 190	576
ttg aaa tcc agc aag tat ata gca tgg cct ttg cag ggc tgg caa gcc Leu Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala 195 200 205	624
acg ttt ggt ggt ggc gac cat cct cca aaa tcg gat ctg gtt ccg cgt Thr Phe Gly Gly Gly Asp His Pro Pro Lys Ser Asp Leu Val Pro Arg 210 215 220	672
gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn 225 230 235 240	720
caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln 245 250 255	768
gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa	816

Ala	Lys	Ala	Trp	Gly	Asn	Ala	Gln	Tyr	Lys	Lys	Tyr	Gly	Leu	Ser	Lys	
			260					265					270			
tca	gaa	aaa	gaa	gct	ata	gta	tca	tat	act	aaa	agc	gct	agt	gaa	ata	864
Ser	Glu	Lys	Glu	Ala	Ile	Val	Ser	Tyr	Thr	Lys	Ser	Ala	Ser	Glu	Ile	
		275					280					285				
aat	gga	aag	cta	aga	caa	aat	aag	gga	gtt	atc	aat	gga	ttt	cct	tca	912
Asn	Gly	Lys	Leu	Arg	Gln	Asn	Lys	Gly	Val	Ile	Asn	Gly	Phe	Pro	Ser	
	290					295					300					
aat	tta	ata	aaa	caa	gtt	gaa	ctt	tta	gat	aaa	tct	ttt	aat	aaa	atg	960
Asn	Leu	Ile	Lys	Gln	Val	Glu	Leu	Leu	Asp	Lys	Ser	Phe	Asn	Lys	Met	
305					310					315					320	
aag	acc	cct	gaa	aat	att	atg	tta	ttt	aga	ggc	gac	gac	cct	gct	tat	1008
Lys	Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr	
				325					330					335		
tta	gga	aca	gaa	ttt	caa	aac	act	ctt	ctt	aat	tca	aat	ggt	aca	att	1056
Leu	Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile	
			340					345					350			
aat	aaa	acg	gct	ttt	gaa	aag	gct	aaa	gct	aag	ttt	tta	aat	aaa	gat	1104
Asn	Lys	Thr	Ala	Phe	Glu	Lys	Ala	Lys	Ala	Lys	Phe	Leu	Asn	Lys	Asp	
		355					360					365				
aga	ctt	gaa	tat	gga	tat	att	agt	act	tca	tta	atg	aat	gtt	tct	caa	1152
Arg	Leu	Glu	Tyr	Gly	Tyr	Ile	Ser	Thr	Ser	Leu	Met	Asn	Val	Ser	Gln	
	370					375					380					
ttt	gca	gga	aga	cca	att	att	aca	aaa	ttt	aaa	gta	gca	aaa	ggc	tca	1200
Phe	Ala	Gly	Arg	Pro	Ile	Ile	Thr	Lys	Phe	Lys	Val	Ala	Lys	Gly	Ser	
385					390					395					400	
aag	gca	gga	tat	att	gac	cct	att	agt	gct	ttt	cag	gga	caa	ctt	gaa	1248
Lys	Ala	Gly	Tyr	Ile	Asp	Pro	Ile	Ser	Ala	Phe	Gln	Gly	Gln	Leu	Glu	
				405					410					415		
atg	ttg	ctt	cct	aga	cat	agt	act	tat	cat	ata	gac	gat	atg	aga	ttg	1296
Met	Leu	Leu	Pro	Arg	His	Ser	Thr	Tyr	His	Ile	Asp	Asp	Met	Arg	Leu	
			420					425					430			
tct	tct	gat	ggt	aaa	caa	ata	ata	att	aca	gca	aca	atg	atg	ggc	aca	1344
Ser	Ser	Asp	Gly	Lys	Gln	Ile	Ile	Ile	Thr	Ala	Thr	Met	Met	Gly	Thr	
		435					440					445				
gct	atc	aat	cct	aaa	gaa	ttc	aga	agg	aaa	caa	aga	aga	aaa	aga	aga	1392
Ala	Ile	Asn	Pro	Lys	Glu	Phe	Arg	Arg	Lys	Gln	Arg	Arg	Lys	Arg	Arg	
	450					455					460					
ctg	cag	gcg	gcc	gca	tcg	tga										1413
Leu	Gln	Ala	Ala	Ala	Ser											
465					470											

<210> 20

<211> 470
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Includes GST sequences, ADP-ribosyl transferase C3
 (C. botulinum) sequence and a random basic amino acid
 sequence

<400> 20

Met Ser Pro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln Pro
 1 5 10 15

Thr Arg Leu Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu His Leu
 20 25 30

Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu
 35 40 45

Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp Gly Asp Val Lys
 50 55 60

Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile Ala Asp Lys His Asn
 65 70 75 80

Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu
 85 90 95

Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser
 100 105 110

Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu
 115 120 125

Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn
 130 135 140

Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp
 145 150 155 160

Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu
 165 170 175

Val Cys Phe Lys Lys Arg Ile Glu Ala Ile Pro Gln Ile Asp Lys Tyr
 180 185 190

Leu Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala
 195 200 205

Thr Phe Gly Gly Gly Asp His Pro Pro Lys Ser Asp Leu Val Pro Arg
 210 215 220

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
 225 230 235 240

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
 245 250 255

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
 260 265 270

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
 275 280 285

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
 290 295 300

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
 305 310 315 320

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
 325 330 335

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
 340 345 350

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
 355 360 365

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
 370 375 380

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser
 385 390 395 400

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
 405 410 415

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
420 425 430

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
435 440 445

Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg
450 455 460

Leu Gln Ala Ala Ala Ser
465 470

<210> 21
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Random basic amino acid sequence of C3Basic1

<400> 21

Lys Arg Arg Arg Arg Arg Pro Lys Lys Arg Arg Arg Ala Lys Arg Arg
1 5 10 15

<210> 22
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide used in the cloning of a random basic amino acid
sequence in C3Basic1

<400> 22
aagagaaggc gaagaagacc taagaagaga cgaagggcga agaggaga 48

<210> 23
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide used in the cloning of a random basic amino acid
sequence in C3Basic1

<400> 23
ttctcttccg cttcttctgg attcttctct gcttcccgct tctcctct 48

<210> 24
 <211> 792
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of C3Basic1: includes ADP-ribosyl transferase C3
 (Clostridium botulinum) sequence and a sequence encoding a random
 basic amino acid sequence and a Histidine tag.

<220>
 <221> CDS
 <222> (1)..(792)

<400> 24
 gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48
 Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
 1 5 10 15
 caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96
 Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
 20 25 30
 gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144
 Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
 35 40 45
 tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192
 Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
 50 55 60
 aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240
 Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
 65 70 75 80
 aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288
 Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
 85 90 95
 aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336
 Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
 100 105 110
 tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384
 Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
 115 120 125
 aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432
 Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
 130 135 140
 aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa 480
 Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
 145 150 155 160

ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca	528
Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser	
165 170 175	
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa	576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu	
180 185 190	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg	624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu	
195 200 205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca	672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr	
210 215 220	
gct atc aat cct aaa gaa ttc aag aga agg cga aga aga cct aag aag	720
Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Arg Pro Lys Lys	
225 230 235 240	
aga cga agg gcg aag agg aga cac cac cac cac cac cac gtc gac tcg	768
Arg Arg Arg Ala Lys Arg Arg His His His His His His Val Asp Ser	
245 250 255	
agc ggc cgc atc gtg act gac tga	792
Ser Gly Arg Ile Val Thr Asp	
260	

<210> 25
 <211> 263
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3Basic1: includes ADP-ribosyl transferase C3
 (Clostridium botulinum) sequence and a sequence encoding a
 random basic amino acid sequence and a Histidine tag.

<400> 25

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn	
1 5 10 15	
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln	
20 25 30	
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys	
35 40 45	
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile	
50 55 60	

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser
165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
210 215 220

Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Arg Pro Lys Lys
225 230 235 240

Arg Arg Arg Ala Lys Arg Arg His His His His His His Val Asp Ser
245 250 255

Ser Gly Arg Ile Val Thr Asp
260

<210> 26
<211> 13
<212> PRT

<213> Artificial Sequence

<220>

<223> Random amino acid sequence of C3Basic2

<400> 26

Lys Arg Arg Arg Arg Lys Lys Arg Arg Gln Arg Arg Arg
1 5 10

<210> 27

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a random basic amino acid sequence in C3Basic2

<400> 27

aagcgtcgcac gtagaaagaa acgtagacag cgtagacgt 39

<210> 28

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a random basic amino acid sequence in C3Basic2

<400> 28

ttcgcagctg catcttttctt tgcattctgtc gcatctgca 39

<210> 29

<211> 783

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3Basic2: includes sequences from ADP-ribosyl-transferase C3 (Clostridium botulinum) and a sequence encoding a random basic amino acid sequence and a histidine tag.

<220>

<221> CDS

<222> (1)..(783)

<400> 29

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48
Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
1 5 10 15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa	96
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln	
20 25 30	
gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa	144
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys	
35 40 45	
tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata	192
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile	
50 55 60	
aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca	240
Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser	
65 70 75 80	
aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg	288
Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met	
85 90 95	
aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat	336
Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr	
100 105 110	
tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att	384
Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile	
115 120 125	
aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat	432
Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp	
130 135 140	
aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa	480
Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln	
145 150 155 160	
ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca	528
Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser	
165 170 175	
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa	576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu	
180 185 190	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg	624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu	
195 200 205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca	672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr	
210 215 220	
gct atc aat cct aaa gaa ttc aag cgt cga cgt aga aag aaa cgt aga	720
Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Lys Lys Arg Arg	
225 230 235 240	

cag cgt aga cgt cac cac cac cac cac cac gtc gac tcg agc ggc cgc 768
 Gln Arg Arg Arg His His His His His His Val Asp Ser Ser Gly Arg
 245 250 255

atc gtg act gac tga 783
 Ile Val Thr Asp
 260

<210> 30
 <211> 260
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3Basic2: includes sequences from ADP-ribosyl-
 transferase C3 (Clostridium botulinum) and a sequence encoding
 a random basic amino acid sequence and a histidine tag.

<400> 30

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
 1 5 10 15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
 20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
 35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
 50 55 60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
 65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
 85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
 100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
 115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
 130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
 145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser
 165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
 180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
 195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
 210 215 220

Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Lys Lys Arg Arg
 225 230 235 240

Gln Arg Arg Arg His His His His His His Val Asp Ser Ser Gly Arg
 245 250 255

Ile Val Thr Asp
 260

<210> 31
 <211> 9
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Reverse HIV-1 Tat amino acid sequence of C3Basic3

<400> 31

Arg Arg Lys Gln Arg Arg Lys Arg Arg
 1 5

<210> 32
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of a reverse HIV Tat
 sequence in C3Basic3

<400> 32
 agaaggaac aaagaagaaa aagaaga

<210> 33
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of a reverse HIV Tat sequence in C3Basic3

<400> 33
 tcttcctttg tttcttcttt ttctttct 27

<210> 34
 <211> 771
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of C3Basic3: includes sequences from ADP-ribosyl tranferase C3 (C. botulinum) and a sequence encoding a reverse HIV-1 Tat amino acid sequence and a Histidine tag

<220>
 <221> CDS
 <222> (1)..(771)

<400> 34
 gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48
 Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
 1 5 10 15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96
 Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
 20 25 30

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144
 Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
 35 40 45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192
 Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
 50 55 60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240
 Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
 65 70 75 80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288
 Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
 85 90 95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336
 Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100	105	110	
tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att			384
Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile			
115	120	125	
aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat			432
Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp			
130	135	140	
aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa			480
Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln			
145	150	155	160
ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca			528
Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser			
	165	170	175
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa			576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu			
	180	185	190
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg			624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu			
	195	200	205
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca			672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr			
	210	215	220
gct atc aat cct aaa gaa ttc aga agg aaa caa aga aga aaa aga aga			720
Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg			
225	230	235	240
cac cac cac cac cac cac gtc gac tcg agc ggc cgc atc gtg act gac			768
His His His His His His Val Asp Ser Ser Gly Arg Ile Val Thr Asp			
	245	250	255
tga			771

<210> 35
 <211> 256
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3Basic3: includes sequences from ADP-ribosyl
 tranferase C3 (C. botulinum) and a sequence encoding a reverse
 HIV-1 Tat amino acid sequence and a Histidine tag

<400> 35

Gly	Ser	Ser	Arg	Val	Asp	Leu	Gln	Ala	Cys	Asn	Ala	Tyr	Ser	Ile	Asn
1				5					10					15	

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
 20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
 35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
 50 55 60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
 65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
 85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
 100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
 115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
 130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
 145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser
 165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu
 180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
 195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
 210 215 220

Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg
 225 230 235 240

His His His His His His Val Asp Ser Ser Gly Arg Ile Val Thr Asp

245

250

255

<210> 36
 <211> 887
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Sequence of C3APLT: includes sequences from ADP-ribosyl transferase C3 (*Clostridium botulinum*) and a sequence encoding a proline rich region.

<220>

<221> CDS

<222> (1)..(747)

<400> 36

gga	tcc	tct	aga	gtc	gac	ctg	cag	gca	tgc	aat	gct	tat	tcc	att	aat	48
Gly	Ser	Ser	Arg	Val	Asp	Leu	Gln	Ala	Cys	Asn	Ala	Tyr	Ser	Ile	Asn	
1				5					10					15		

caa	aag	gct	tat	tca	aat	act	tac	cag	gag	ttt	act	aat	att	gat	caa	96
Gln	Lys	Ala	Tyr	Ser	Asn	Thr	Tyr	Gln	Glu	Phe	Thr	Asn	Ile	Asp	Gln	
			20					25					30			

gca	aaa	gct	tgg	ggt	aat	gct	cag	tat	aaa	aag	tat	gga	cta	agc	aaa	144
Ala	Lys	Ala	Trp	Gly	Asn	Ala	Gln	Tyr	Lys	Lys	Tyr	Gly	Leu	Ser	Lys	
		35					40					45				

tca	gaa	aaa	gaa	gct	ata	gta	tca	tat	act	aaa	agc	gct	agt	gaa	ata	192
Ser	Glu	Lys	Glu	Ala	Ile	Val	Ser	Tyr	Thr	Lys	Ser	Ala	Ser	Glu	Ile	
	50					55					60					

aat	gga	aag	cta	aga	caa	aat	aag	gga	ggt	atc	aat	gga	ttt	cct	tca	240
Asn	Gly	Lys	Leu	Arg	Gln	Asn	Lys	Gly	Val	Ile	Asn	Gly	Phe	Pro	Ser	
65					70					75					80	

aat	tta	ata	aaa	caa	ggt	gaa	ctt	tta	gat	aaa	tct	ttt	aat	aaa	atg	288
Asn	Leu	Ile	Lys	Gln	Val	Glu	Leu	Leu	Asp	Lys	Ser	Phe	Asn	Lys	Met	
				85					90					95		

aag	acc	cct	gaa	aat	att	atg	tta	ttt	aga	ggc	gac	gac	cct	gct	tat	336
Lys	Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr	
			100					105					110			

tta	gga	aca	gaa	ttt	caa	aac	act	ctt	ctt	aat	tca	aat	ggt	aca	att	384
Leu	Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile	
		115					120					125				

aat	aaa	acg	gct	ttt	gaa	aag	gct	aaa	gct	aag	ttt	tta	aat	aaa	gat	432
Asn	Lys	Thr	Ala	Phe	Glu	Lys	Ala	Lys	Ala	Lys	Phe	Leu	Asn	Lys	Asp	
	130					135					140					

aga	ctt	gaa	tat	gga	tat	att	agt	act	tca	tta	atg	aat	ggt	tct	caa	480
Arg	Leu	Glu	Tyr	Gly	Tyr	Ile	Ser	Thr	Ser	Leu	Met	Asn	Val	Ser	Gln	

145	150	155	160	
ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca				528
Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser				
	165	170	175	
aag gca gga tat att gac cct att agt gct ttt gca gga caa ctt gaa				576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu				
	180	185	190	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg				624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu				
	195	200	205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca				672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr				
	210	215	220	
gct atc aat cct aaa gaa ttc gtg atg aat ccc gca aac gcg caa ggc				720
Ala Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly				
	225	230	235	240
aga cat aca ccc ggt acc aga ctc tag agctagagaa ggagtttcac				767
Arg His Thr Pro Gly Thr Arg Leu				
	245			
ttcaatcgct acttgacccg tcggcgaagg atcgagatcg cccacgccct gtgcctcacg				827
gagcgccaga taaagatttg gttccagaat cggcgcgatga agtggaagaa ggagaactga				887

<210> 37
 <211> 248
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of C3APLT: includes sequences from ADP-ribosyl transferase C3 (Clostridium botulinum) and a sequence encoding a proline rich region.

<400> 37

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn
1 5 10 15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln
20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys
35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile
50 55 60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser
65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met
85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr
100 105 110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile
115 120 125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp
130 135 140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln
145 150 155 160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser
165 170 175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu
180 185 190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu
195 200 205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr
210 215 220

Ala Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly
225 230 235 240

Arg His Thr Pro Gly Thr Arg Leu
245

<210> 38

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of C3APLT in pET vector
 <400> 38
 ggatctgggtt ccgcgtcata tgtctagagt cgacctg 37

<210> 39
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the cloning of C3APLT in pET vector
 <400> 39
 cgcgatcca ttagttctcc ttcttccact tc 32

<210> 40
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the sequencing of C3APLT
 <400> 40
 aaattaatac gactcactat aggg 24

<210> 41
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide used in the sequencing of C3APLT
 <400> 41
 gctagttatt gctcagcgg 19

<210> 42
 <211> 888
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of C3APLT in a pET vector: includes sequences from
 ADP-ribosyl transferase C3 (Clostridium botulinum) and a sequence
 encoding a proline rich region.

<220>
 <221> CDS
 <222> (1)..(744)

Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr Ala
 210 215 220

atc aat cct aaa gaa ttc gtg atg aat ccc gca aac gcg caa ggc aga 720
 Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly Arg
 225 230 235 240

cat aca ccc ggt acc aga ctc tag agctagagaa ggagttttcac ttcaatcgct 774
 His Thr Pro Gly Thr Arg Leu
 245

acttgacccg tcggcgaagg atcgagatcg cccacgccct gtgcctcacg gagcgccaga 834
 taaagatttg gttccagaat cggcgcatga agtggaagaa ggaggactaa ctga 888

<210> 43
 <211> 247
 <212> PRT
 <213> Artificial Sequence
 <220>
 <223> Sequence of C3APLT in a pET vector: includes sequences from
 ADP-ribosyl transferase C3 (Clostridium botulinum) and a sequence
 encoding a proline rich region.
 <400> 43

Met Ser Arg Val Ala Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn Gln
 1 5 10 15

Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln Ala
 20 25 30

Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys Ser
 35 40 45

Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile Asn
 50 55 60

Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser Asn
 65 70 75 80

Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met Lys
 85 90 95

Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr Leu
 100 105 110

Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile Asn
 115 120 125

Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp Arg
 130 135 140

Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln Phe
 145 150 155 160

Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser Lys
 165 170 175

Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu Met
 180 185 190

Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu Ser
 195 200 205

Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr Ala
 210 215 220

Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly Arg
 225 230 235 240

His Thr Pro Gly Thr Arg Leu
 245

<210> 44
 <211> 64
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence of Antennapedia from C3APL

<400> 44

Val Met Glu Ser Arg Lys Arg Ala Arg Gln Thr Tyr Thr Arg Tyr Gln
 1 5 10 15

Thr Leu Glu Leu Glu Lys Glu Phe His Phe Asn Arg Tyr Leu Thr Arg
 20 25 30

Arg Arg Arg Ile Glu Ile Ala His Ala Leu Cys Leu Thr Glu Arg Gln
 35 40 45

Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys Glu Asn
50 55 60

<210> 45
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid sequence of Antennapedia from C3APS

<400> 45

Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys
1 5 10 15

Val Asp Ser

<210> 46
<211> 60
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid sequence of HIV-1 Tat from C3-TL

<400> 46

Lys His Pro Gly Ser Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys
1 5 10 15

Lys Lys Cys Cys Phe His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu
20 25 30

Gly Ile Ser Tyr Gly Arg Lys Arg Arg Gln Arg Arg Arg Ala His Gln
35 40 45

Asn Ser Gln Thr His Gln Ala Ser Leu Ser Lys Gln
50 55 60

<210> 47
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid sequence of HIV-1 Tat from C3-TS

<400> 47

Tyr Gly Ala Lys Lys Arg Arg Gln Arg Arg Arg Val Asp Ser Ser Gly
1 5 10 15

Pro His Arg Asp
20

<210> 48

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of the proline rich region of C3APLT

<400> 48

Val Met Asn Pro Ala Asn Ala Gln Gly Arg His Thr Pro Gly Thr Arg
1 5 10 15

Leu

<210> 49

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence fused to C3 protein to created C3 Tat-short

<400> 49

Tyr Gly Arg Lys Arg Arg Gln Arg Arg Arg
1 5 10

<210> 50

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Reverse sequence of Tat amino acids fused to C3 protein to
created C3Basic3

<400> 50

Arg Arg Gln Arg Arg Lys Lys Arg
1 5

<210> 51
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> transport peptide rich in Proline

<400> 51

Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro
1 5 10

<210> 52
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Sperm fertiline alpha peptide

<400> 52

His Pro Ile Gln Ile Ala Ala Phe Leu Ala Arg Ile Pro Pro Ile Ser
1 5 10 15

Ser Ile Gly Thr Cys Ile Leu Lys
20

<210> 53
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid sequence from the C3Basic3

<400> 53

Arg Arg Lys Gln Arg Arg Lys Arg Arg
1 5

<210> 54
<211> 744
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence of C3-07Q189A

<400> 54
atgtctagag tcgacctgca ggcatgcaat gcttattcca ttaatcaaaa ggcttattca 60


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aatacttacc aggagtttac taatattgat caagcaaaag cttggggtaa tgctcagtat 120
aaaaagtatg gactaagcaa atcagaaaaa gaagctatag tatcatatac taaaagcgct 180
agtgaaataa atggaaagct aagacaaaat aaggagagtta tcaatggatt tccttcaaatt 240
ttaataaaaac aagttgaact tttagataaa tctttttaata aaatgaagac ccctgaaaat 300
attatgttat ttagaggcga cgaccctgct tattttaggaa cagaatttca aaacactctt 360
cttaattcaa atggtacaat taataaaaacg gcttttgaaa aggctaaagc taagttttta 420
aataaagata gacttgaata tggatatatt agtacttcat taatgaatgt ttctcaattt 480
gcaggaagac caattattac aaaattttaa gtagcaaaag gctcaaaggc aggatatatt 540
gaccctatta gtgcttttgc aggagcactt gaaatgttgc ttcctagaca tagtacttat 600
catatagacg atatgagatt gtcttctgat ggtaaacaaa taataattac agcaacaatg 660
atgggcacag ctatcaatcc taaagaattc gtgatgaatc ccgcaaacgc gcaaggcaga 720
catacacccg gtaccagact ctag 744

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<210> 55
 <211> 247
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence of C3-07Q189A

<400> 55

Met	Ser	Arg	Val	Asp	Leu	Gln	Ala	Cys	Asn	Ala	Tyr	Ser	Ile	Asn	Gln	1	5	10	15
Lys	Ala	Tyr	Ser	Asn	Thr	Tyr	Gln	Glu	Phe	Thr	Asn	Ile	Asp	Gln	Ala	20	25	30	
Lys	Ala	Trp	Gly	Asn	Ala	Gln	Tyr	Lys	Lys	Tyr	Gly	Leu	Ser	Lys	Ser	35	40	45	
Glu	Lys	Glu	Ala	Ile	Val	Ser	Tyr	Thr	Lys	Ser	Ala	Ser	Glu	Ile	Asn	50	55	60	
Gly	Lys	Leu	Arg	Gln	Asn	Lys	Gly	Val	Ile	Asn	Gly	Phe	Pro	Ser	Asn	65	70	75	80
Leu	Ile	Lys	Gln	Val	Glu	Leu	Leu	Asp	Lys	Ser	Phe	Asn	Lys	Met	Lys	85	90	95	
Thr	Pro	Glu	Asn	Ile	Met	Leu	Phe	Arg	Gly	Asp	Asp	Pro	Ala	Tyr	Leu	100	105	110	
Gly	Thr	Glu	Phe	Gln	Asn	Thr	Leu	Leu	Asn	Ser	Asn	Gly	Thr	Ile	Asn	115	120	125	
Lys	Thr	Ala	Phe	Glu	Lys	Ala	Lys	Ala	Lys	Phe	Leu	Asn	Lys	Asp	Arg	130	135	140	
Leu	Glu	Tyr	Gly	Tyr	Ile	Ser	Thr	Ser	Leu	Met	Asn	Val	Ser	Gln	Phe	145	150	155	160
Ala	Gly	Arg	Pro	Ile	Ile	Thr	Gln	Phe	Lys	Val	Ala	Lys	Gly	Ser	Lys	165	170	175	
Ala	Gly	Tyr	Ile	Asp	Pro	Ile	Ser	Ala	Phe	Gln	Gly	Ala	Leu	Glu	Met	180	185	190	
Leu	Leu	Pro	Arg	His	Ser	Thr	Tyr	His	Ile	Asp	Asp	Met	Arg	Leu	Ser	195	200	205	
Ser	Asp	Gly	Lys	Gln	Ile	Ile	Ile	Thr	Ala	Thr	Met	Met	Gly	Thr	Ala	210	215	220	
Ile	Asn	Pro	Lys	Glu	Phe	Val	Met	Asn	Pro	Ala	Asn	Ala	Gln	Gly	Arg	225	230	235	240
His	Thr	Pro	Gly	Thr	Arg	Leu										245			

<210> 56
 <211> 783
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of BA-05

<400> 56
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 tcaaatactt accaggagtt tactaatatt gatcaagcaa aagcttgggg taatgctcag 120
 tataaaaagt atggactaag caaatcagaa aaagaagcta tagtatcata tactaaaagc 180
 gctagtga aaatggaaa gctaagacaa aataaggagg ttatcaatgg atttccttca 240
 aatttaataa aacaagttga acttttagat aaatccttta ataaaatgaa gacccctgaa 300
 aatattatgt tatttagagg cgacgaccct gcttatttag gaacagaatt tcaaaacact 360
 cttcttaatt caaatggtac aattaataaa acggcttttg aaaaggctaa agctaagttt 420
 ttaaataaag atagacttga atatggatat attagtactt cattaatgaa tgtttctcaa 480
 tttgcaggaa gaccaattat taaaaaattt aaagtagcaa aaggctcaaa ggcaggatat 540
 attgacccta ttagtgcttt tgcaggacaa cttgaaatgt tgcttcctag acatagtact 600
 tatcatatag acgatatgag attgtcttct gatggtaa ac aaataataat tacagcaaca 660
 atgatgggca cagctatcaa tcctaaagaa ttcgtgatga atcccgcaaa cgcgcaaggc 720
 agacatacac ccggtaccag actctagagc tagagaagga gtttcacttc aatcgctact 780
 tga 783

<210> 57
 <211> 247
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence of pET9a-BA-07

<400> 57
 Met Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn Gln
 1 5 10 15
 Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln Ala
 20 25 30
 Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys Ser
 35 40 45
 Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile Asn
 50 55 60
 Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser Asn
 65 70 75 80
 Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met Lys
 85 90 95
 Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr Leu
 100 105 110
 Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile Asn
 115 120 125
 Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp Arg
 130 135 140
 Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln Phe
 145 150 155 160
 Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser Lys
 165 170 175

Ala	Gly	Tyr	Ile	Asp	Pro	Ile	Ser	Ala	Phe	Ala	Gly	Gln	Leu	Glu	Met
			180					185					190		
Leu	Leu	Pro	Arg	His	Ser	Thr	Tyr	His	Ile	Asp	Asp	Met	Arg	Leu	Ser
		195					200					205			
Ser	Asp	Gly	Lys	Gln	Ile	Ile	Ile	Thr	Ala	Thr	Met	Met	Gly	Thr	Ala
	210					215					220				
Ile	Asn	Pro	Lys	Glu	Phe	Val	Met	Asn	Pro	Ala	Asn	Ala	Gln	Gly	Arg
225					230					235					240
His	Thr	Pro	Gly	Thr	Arg	Leu									
				245											

<210> 58
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 58
 cctaaagaat tcgtgatgaa tcccgcaaac gcgca

35

<210> 59
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 59
 tgcgcgtttg cgggattcat cacgaattct ttagg

35